

SECTION 213400

PRESSURE MAINTENANCE PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Vertical, multistage, pressure-maintenance pumps.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, performance curves, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For pumps, accessories, and specialties. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Record Drawings: Complete Shop Drawing re-submittal updated to reflect actual final system installation integral to Division 21 "Water-Based Fire Suppression Systems" record drawing submittal.
- B. Operation and Maintenance Data: For fire pumps to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Comply with Division 21 Section "Water-Based Fire Suppression Systems".
- B. NFPA Compliance: Comply with NFPA 20 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-suppression water-service piping.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 COORDINATION

- A. Definition, "Coordinate": Where Sections of the Work interact, the Contractor responsible for this Section of the Work initiates verbal and/ or written communication with one or more different Contractors responsible for other interacting Sections of the Work for the purposes of establishing a coordinated approach of product selections and installation sequencing that satisfies the individual requirements of the interacting Sections of the Work as well as the requirements of the Work as a whole.
- B. Coordinate construction operations with those of other Sections of the Work and other entities to ensure efficient and orderly installation of each part of the Work.
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Coordinate electrical connections for the fire pump and controller.
- C. Coordinate operations and product selections of this Section with operations and product selections included in different Sections that depend on each other for proper installation, connection, and operation.
- D. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
- E. Coordinate installation of different components with other Sections of the Work to ensure maximum performance and accessibility for required maintenance, service, and repair.
- F. Make adequate provisions to accommodate items scheduled for later installation.
- G. Coordination Drawings: Contribute to preparation of Coordination Drawings; indicate facility fire suppression water service piping Work coordinated with other Sections of the Work.

PART 2 - PRODUCTS

2.1 VERTICAL, MULTISTAGE, PRESSURE-MAINTENANCE PUMPS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. A-C Fire Pump Systems; a business of ITT Industries.
 - 2. Grundfos Management A/S; Grundfos Pumps Corporation U.S.A.
 - 3. PACO Pumps; Grundfos Pumps Corporation U.S.A.
 - 4. TACO Incorporated.
- B. Description: Factory-assembled and -tested, multistage, barrel-type vertical pump as defined in HI 2.1-2.2 and HI 2.3; designed for surface installation with pump and motor direct coupled and mounted vertically.
- C. Pump Construction:
 - 1. Barrel: Stainless steel.
 - 2. Suction and Discharge Chamber: Cast iron with flanged inlet and outlet.
 - 3. Pump Head/Motor Mount: Cast iron.
 - 4. Impellers: Stainless steel, balanced, and keyed to shaft.
 - 5. Pump Shaft: Stainless steel.
 - 6. Seal: Mechanical type with carbon rotating face and silicon-carbide stationary seat.

7. Intermediate Chamber Bearings: Aluminum-oxide ceramic or bronze.
8. Chamber-Base Bearing: Tungsten carbide.
9. O-Rings: EPDM or NBR.
- D. Motor: Single speed with permanently lubricated ball bearings and rigidly mounted to pump head. Comply with requirements in Division 21.
- E. Nameplate: Permanently attached to pump and indicating capacity and characteristics.
- F. Capacities and Characteristics:
 1. Comply with Drawings.

2.2 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 21.
 1. Motor Sizes: Minimum size as indicated; if not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. NFPA Standard: Comply with NFPA 20 for installation of pressure-maintenance pumps.
- B. Base-Mounted Pump Mounting: Install pumps on concrete bases. Comply with requirements for concrete bases specified in Division 03.
 1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
 3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 4. Install anchor bolts to elevations required for proper attachment to supported equipment.
 5. Attach pumps to equipment base using anchor bolts.
- C. Install multistage pressure-maintenance pumps according to HI 1.4.
- D. Install vertical-turbine, pressure-maintenance pumps according to HI 2.4.
- E. Install isolation valves in both inlet and outlet pipes near the pump. Comply with Division 21 requirements for valves.

3.2 FIELD QUALITY CONTROL

- A. Test each fire pump with its controller as a unit. Comply with requirements for controller for fire-pump drivers specified in Division 21.
- B. Perform tests and inspections.
 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Pressure-maintenance pumps will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.3 ADJUSTING

- A. Lubricate pumps as recommended by manufacturer.
- B. Set field-adjustable pressure-switch ranges as indicated.

END OF SECTION